# Mounting instructions

## Mounting instructions – general

To provide proper bearing performance and prevent premature failure, skill and cleanliness when mounting Y-bearings or Y-bearing units are necessary. As precision components, they should be handled carefully when mounting. It is also important to choose the appropriate method of mounting and to use the correct tools.

The method used for mounting a Y-bearing unit depends on:

- the overall machine design
- the Y-bearing housing design
- the method used to attach the unit to the shaft

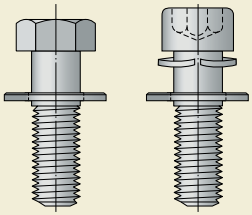
NOTE: Failure to carefully follow applicable mounting instructions can result in premature bearing failure or improper performance. For further information, contact the SKF application engineering service.

Detailed mounting instructions can be found on the following pages.

Y-bearings, Y-housings or Y-bearing units should not be removed from their original packaging until immediately before they are mounted.

Before installing a Y-bearing unit, check that the shaft is clean and free of any burrs and that the shaft seat is within tolerance. Also be sure that the support surfaces are clean and free of burrs and that the flatness is within the IT7 tolerance grade and that the roughness $R_a \leq 12{,}5$ µm.

Fig. 1



### Tools

To mount or dismount Y-bearing units, the following tools are required:

- a hexagonal key (hex wrench) to tighten or loosen grub (set) screws (→ **table 1**, **page 54**)
- a hook spanner to tighten or loosen the lock nut on an adapter sleeve (→ **table 2**, **page 55**)
- a hook spanner with a stud to tighten or loosen the eccentric locking collar
- a spanner or hexagonal key to tighten or loosen the fasteners

The hook spanners are part of the comprehensive SKF range of maintenance products. Detailed information can be found in the printed catalogue *SKF Maintenance and Lubrication Products* or online at www.skf.com.

### Attaching Y-bearing units to the support base

To reduce vibration and enable heat to dissipate from the unit, the housing must be firmly attached to the support base. To attach Y-bearing units to the support surface, SKF recommends using 8.8 class bolts or studs and a washer to ISO 7089:2000 or 7090:2000 and a spring

washer. Hexagonal head bolts in accordance with ISO 4014:1999 are appropriate. Alternatively, hexagonal socket head cap screws in accordance with ISO 4762:1988 can be used (→ **fig. 1**).

## Assembling units

In cases where the Y-bearing and composite or cast Y-housing are not supplied as a unit, the first step is to assemble the bearing into the housing. To do this, start by removing the locking collar if the bearing has one. Then insert the bearing into the filling slot in the housing bore (→ **fig. 2**) and with a round piece of wood or pipe, swivel the bearing into position so that the locking device is facing in the same direction as the filling slots (→ **fig. 3**). When installing standard bearings, make sure that the relubrication hole in the bearing on the side of the locking device does not coincide with the filling slot in the housing, otherwise grease leakage may result (→ **fig. 4**).

Fig. 2

Fig. 3

Fig. 4

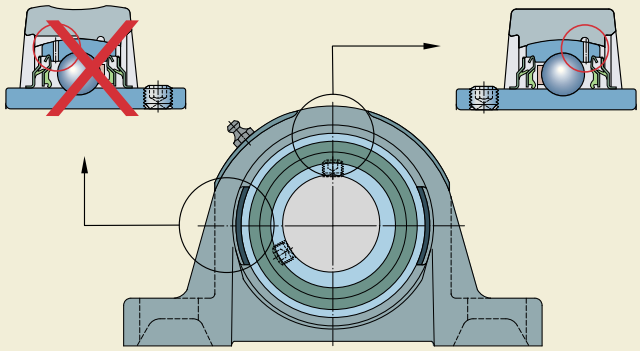
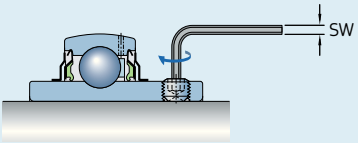
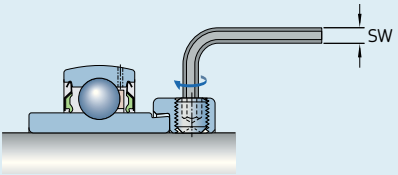


**Table 1**

**Hexagonal keys to tighten grub screws in inner rings or eccentric locking collars – sizes and tightening torques**



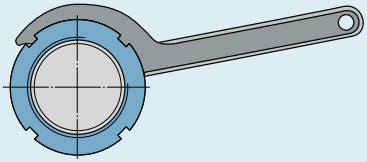

| Bearing size[1] | Bearing or unit with metric bore | | Bearing or unit with inch bore | |
|---|---|---|---|---|
| | Hexagonal key size SW | Tightening torque | Hexagonal key size SW | Tightening torque |
| – | mm | Nm | inch | Nm |
| **Bearings in the YAR series, unit with designation suffix TF, TR** | | | | |
| **03** | 3 | 4 | 3/32 | 4 |
| **04** | 3 | 4 | 1/8 | 4 |
| **05** | 3 | 4 | 1/8 | 4 |
| **06** | 3 | 4 | 1/8 | 4 |
| **07** | 3 | 4 | 5/32 | 6,5 |
| **08** | 4 | 6,5 | 5/32 | 6,5 |
| **09** | 4 | 6,5 | 5/32 | 6,5 |
| **10** | 5 | 16,5 | 3/16 | 16,5 |
| **11** | 5 | 16,5 | 3/16 | 16,5 |
| **12** | 5 | 16,5 | 3/16 | 16,5 |
| **13** | 5 | 16,5 | 3/16 | 16,5 |
| **14** | 5 | 16,5 | 7/32 | 28,5 |
| **15** | 5 | 16,5 | 7/32 | 28,5 |
| **16** | 5 | 16,5 | 7/32 | 28,5 |
| **17** | 6 | 28,5 | – | – |
| **18** | 6 | 28,5 | – | – |
| **20** | 6 | 28,5 | – | – |

| Bearing size[1] | Bearing or unit with metric bore | | Bearing or unit with inch bore | |
|---|---|---|---|---|
| | Hexagonal key size SW | Tightening torque | Hexagonal key size SW | Tightening torque |
| – | mm | Nm | inch | Nm |
| **Bearings in the YAT series, units with designation suffix RM** | | | | |
| **03** | 3 | 4 | 3/32 | 4 |
| **04** | 3 | 4 | 1/8 | 4 |
| **05** | 3 | 4 | 1/8 | 4 |
| **06** | 3 | 4 | 5/32 | 6,5 |
| **07** | 3 | 4 | 5/32 | 6,5 |
| **08** | 3 | 4 | 5/32 | 6,5 |
| **09** | 3 | 4 | 5/32 | 6,5 |
| **10** | 4 | 6,5 | 5/32 | 6,5 |
| **11** | – | – | 3/16 | 16,5 |
| **12** | – | – | 3/16 | 16,5 |
| **15** | – | – | 3/16 | 16,5 |
| **16** | – | – | 3/16 | 16,5 |
| **Bearings in the YET or YEL series, units with designation suffix FM or WF** | | | | |
| **03** | 3 | 4 | 1/8 | 4 |
| **04** | 3 | 4 | 1/8 | 4 |
| **05** | 3 | 4 | 1/8 | 4 |
| **06** | 4 | 6,5 | 5/32 | 6,5 |
| **07** | 5 | 16,5 | 3/16 | 16,5 |
| **08** | 5 | 16,5 | 3/16 | 16,5 |
| **09** | 5 | 16,5 | 3/16 | 16,5 |
| **10** | 5 | 16,5 | 3/16 | 16,5 |
| **11** | 5 | 16,5 | 7/32 | 28,5 |
| **12** | 5 | 16,5 | 7/32 | 28,5 |

[1] For example: bearing size 06 includes all bearings based on a Y 206 bearing, such as YAR 206-101-2F, YAR 206-102-2F, YAR 206-2F, YAR 206-103-2F, YAR 206-104-2F

Table 2

**Hook spanner size and tightening torque for Y-bearings and Y-bearing units on an adapter sleeve**



| Designation<br>Y-bearing + adapter sleeve | Shaft diameter<br>d | | Hook spanner | Tightening torque<br>min | max |
|---|---|---|---|---|---|
| – | mm | in | – | Nm | |
| **Bearings in the YSA series**<br>**Units with designation suffix KF** | | | | | |
| YSA 205-2FK + HE 2305 | – | 3/4 | HN 5 | 13 | 17 |
| YSA 205-2FK + H 2305 | 20 | – | HN 5 | 13 | 17 |
| YSA 206-2FK + HA 2306 | – | 15/16 | HN 6 | 22 | 28 |
| YSA 206-2FK + H 2306 | 25 | – | HN 6 | 22 | 28 |
| YSA 206-2FK + HE 2306 | – | 1 | HN 6 | 22 | 28 |
| YSA 207-2FK + H 2307 | 30 | – | HN 7 | 27 | 33 |
| YSA 207-2FK + HA 2307 | – | 1 3/16 | HN 7 | 27 | 33 |
| YSA 208-2FK + HE 2308 | – | 1 1/4 | HN 8 | 35 | 45 |
| YSA 208-2FK + H 2308 | 35 | – | HN 8 | 35 | 45 |
| YSA 209-2FK + HA 2309 | – | 1 7/16 | HN 9 | 45 | 55 |
| YSA 209-2FK + HE 2309 | – | 1 1/2 | HN 9 | 45 | 55 |
| YSA 209-2FK + H 2309 | 40 | – | HN 9 | 45 | 55 |
| YSA 210-2FK + HS 2310 | – | 1 5/8 | HN 10 | 55 | 65 |
| YSA 210-2FK + HA 2310 | – | 1 11/16 | HN 10 | 55 | 65 |
| YSA 210-2FK + HE 2310 | – | 1 3/4 | HN 10 | 55 | 65 |
| YSA 210-2FK + H 2310 | 45 | – | HN 10 | 55 | 65 |
| YSA 211-2FK + HA 2311 B | – | 1 15/16 | HN 11 | 65 | 85 |
| YSA 211-2FK + H 2311 | 50 | – | HN 11 | 65 | 85 |
| YSA 211-2FK + HE 2311 | – | 2 | HN 11 | 65 | 85 |
| YSA 212-2FK + HS 2312 | – | 2 1/8 | HN 12 | 85 | 115 |
| YSA 212-2FK + H 2312 | 55 | – | HN 12 | 85 | 115 |
| YSA 213-2FK + HA 2313 | – | 2 3/16 | HN 13 | 110 | 150 |
| YSA 213-2FK + HE 2313 | – | 2 1/4 | HN 13 | 110 | 150 |
| YSA 213-2FK + H 2313 | 60 | – | HN 13 | 110 | 150 |
| YSA 213-2FK + HS 2313 | – | 2 3/8 | HN 13 | 110 | 150 |

# Mounting instructions for Y-bearing plummer block units

**with a composite or cast housing and grub screws**

1. Mount any components that are on the shaft between the two Y-bearing units.
2. Slide the Y-bearing plummer (pillow) block unit onto the shaft with its locking device facing outwards.
3. Position the Y-bearing unit on the support surface. Fit the attachment bolts or nuts but do not tighten them.
4. Mount the other Y-bearing plummer block unit on the other end of the shaft, following steps 2 and 3.
5. Carefully align both Y-bearing units, using the shaft. Fully tighten the attachment bolts or nuts in the housing base.
6. Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
7. Tighten the grub screws in the inner rings of both units to the tightening torque indicated in **table 1** on **page 54** (**→ fig. 1**).
8. If applicable, snap the end cover(s) into place.

Fig. 1

# Mounting instructions for Y-bearing plummer block units

**with a cast housing and an eccentric locking collar**

1. Mount any components that are on the shaft between the two Y-bearing units.
2. With the eccentric locking collar removed, slide the Y-bearing plummer block unit onto the shaft with the locking device facing outwards.
3. Position the Y-bearing unit on the support surface. Fit the attachment bolts or nuts but do not tighten them.
4. Mount the other Y-bearing plummer block unit on the other end of the shaft, following steps 2 and 3.
5. Carefully align both Y-bearing units, using the shaft. Fully tighten the attachment bolts or nuts in the housing base.
6. Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
7. Place the eccentric locking collars on the inner ring extension of both Y-bearing units and snug tighten them in the main direction of rotation (→ **fig. 1**).
8. Tighten the locking collars to their final position, using a hook spanner with a stud engaging the hole in the circumference of the collar (→ **fig. 2**).
9. Tighten the grub screw in the eccentric locking collar of both Y-bearing units (→ **fig. 3**) to the tightening torque indicated in **table 1** on **page 54**.
10. If applicable, snap the end cover(s) into place.

Fig. 1

Fig. 2

Fig. 3

# Mounting instructions for Y-bearing plummer block units

**with a cast housing and an adapter sleeve**

**1** Mount any components that are on the shaft between the two Y-bearing units.
**2** Determine the position of the adapter sleeve on the shaft (→ **fig. 1**).
**3** Remove the nut and the locking washer from the adapter sleeve (→ **fig. 2**).
**4** Wipe the preservative from the bore and outside surface of the sleeve.
**5** Expand the adapter sleeve slightly by inserting a screwdriver in the slot of the sleeve and slide the adapter sleeve into position on the shaft (→ **fig. 3**).
**6** Slide the Y-bearing plummer block unit up onto the adapter sleeve with the large end of the tapered bore leading, but do not push it.
**7** Install the locking washer and screw the lock nut onto the adapter sleeve until the Y-bearing unit is firmly in position on the sleeve.
**8** Further tighten the lock nut using one of the following:
- a hook spanner in the HN series to a tightening angle of about 70° (→ **fig. 4**)
- a TMHN lock nut spanner to a tightening angle of about 70°
- a torque wrench to the tightening torque indicated in **table 2** on **page 55**

Make sure that while tightening the nut, the sleeve does not rotate on the shaft.
**9** Lock the nut in position by bending down a tab on the locking washer in one of the slots provided around the circumference of the nut (→ **fig. 5**).
**10** Mount the other Y-bearing plummer block unit on the other end of the shaft, following steps 2 through 9.
**11** Position the Y-bearing units on their support surfaces. Fit the attachment bolts or nuts but do not tighten them.
**12** Carefully align both Y-bearing units, using the shaft and, if possible, turn it a few times. Then tighten the attachment bolts or nuts.
**13** If applicable, snap the end cover(s) into place.

Fig. 1

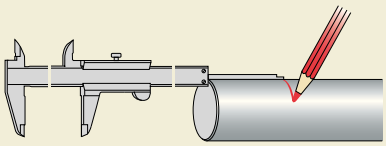


Fig. 2

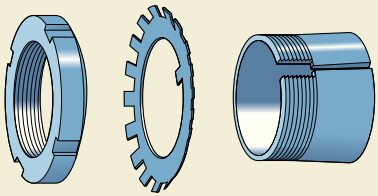


Fig. 3

Fig. 4

Fig. 5

# Mounting instructions for Y-bearing plummer block units

## with a pressed steel housing and grub screws

1 Mount any components that are on the shaft between the two Y-bearing units.
2 Slide the Y-bearings with the locking device facing outward onto the shaft – at both ends. Install the rubber seating ring on the outside diameter of the bearing (optional).
3 Place the base of each housing on its support surface.
4 Place the shaft and Y-bearings into position in each housing base. Then, place the housing caps over the bearings (→ **fig. 1**) and install the attachment bolts or nuts.
5 Carefully align both Y-bearing units, using the shaft. Then, tighten the attachment bolts or nuts.
6 Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
7 Tighten the grub screws in the inner ring of both bearings (→ **fig. 2**) to the tightening torque indicated in **table 1** on **page 54**.

Fig. 1

Fig. 2

# Mounting instructions for Y-bearing plummer block units

**with a pressed steel housing and an eccentric locking collar**

1. Mount any components that are on the shaft between the two Y-bearing units.
2. With the eccentric locking collar removed, slide the Y-bearings onto both shaft ends with the locking device facing outwards. Install the rubber seating ring on the outside diameter of the bearing (optional).
3. Place the base of each housing on its support surface.
4. Place the shaft and Y-bearings into position in each housing base. Then, place the housing caps over the bearings (→ **fig. 1**) and install the attachment bolts or nuts.
5. Carefully align both Y-bearing units, using the shaft. Then, tighten the attachment bolts or nuts.
6. Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
7. Place the eccentric locking collars on the inner ring extension of both Y-bearings and snug tighten them in the main direction of rotation (→ **fig. 2**).
8. Tighten the locking collars to their final position, using a hook spanner with a stud engaging the hole in the circumference of the collar (→ **fig. 3**).
9. Tighten the grub screw in the eccentric locking collar of both Y-bearings (→ **fig. 4**) to the tightening torque indicated in **table 1** on **page 54**.


Fig. 1


Fig. 2


Fig. 3


Fig. 4

# Mounting instructions for flanged Y-bearing units

**with a composite (Y-TECH) or cast housing and grub screws**

1. Mount any components that are on the shaft between the two Y-bearing units.
2. Slide the flanged Y-bearing unit onto the shaft.
3. Fasten the Y-bearing unit securely to the machine wall.
4. Mount the other flanged Y-bearing unit to the opposite end of the shaft, following steps 2 and 3.
5. Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
6. Tighten the grub screws on the inner ring of both units (**→ fig. 1**) to the tightening torque indicated in **table 1** on **page 54**.
7. If applicable, snap the end cover(s) into place.

**Fig. 1**

# Mounting instructions for flanged Y-bearing units

**with a composite (Y-TECH) or cast housing and an eccentric locking collar**

1. Mount any components that are on the shaft between the two Y-bearing units.
2. With the eccentric locking collar removed, slide the flanged Y-bearing unit onto the shaft with the locking device facing outwards.
3. Fasten the Y-bearing unit securely to the machine wall.
4. Mount the other flanged Y-bearing unit to the opposite end of the shaft, following steps 2 and 3.
5. Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
6. Place the eccentric locking collars on the inner ring of both Y-bearings and snug tighten them in the main direction of rotation (→ **fig. 1**).
7. Tighten the locking collars to their final position using a hook spanner with a stud engaging the hole in the circumference of the collar (→ **fig. 2**).
8. Tighten the grub screw in the eccentric locking collar of both units (→ **fig. 3**) to the tightening torque indicated in **table 1** on **page 54**.
9. If applicable, snap the end cover(s) into place.

Fig. 1

Fig. 2

Fig. 3

# Mounting instructions for flanged Y-bearing units

**with a cast housing and an adapter sleeve**

**1** Mount any components that are on the shaft between the two Y-bearing units.
**2** Determine the position of the adapter sleeve on the shaft (→ **fig. 1**). Take into consideration that later during mounting
- the Y-bearing unit will move axially on the sleeve or vice versa
- the shaft will move axially against the Y-bearing unit.

This is particularly important when mounting the second Y-bearing unit.
**3** Remove the nut and locking washer from the adapter sleeve (→ **fig. 2**).
**4** Wipe the preservative from the bore and outside surface.
**5** Expand the adapter sleeve slightly by inserting a screwdriver in the slot of the sleeve and slide the adapter sleeve into position on the shaft (→ **fig. 3**).
**6** Slide the Y-bearing unit up onto the adapter sleeve with the large end of the tapered bore leading, but do not push it.
**7** Fasten the Y-bearing unit securely to the machine wall.
**8** Install the locking washer and screw the lock nut onto the adapter sleeve until the Y-bearing unit is firmly in position on the sleeve.
**9** Further tighten the lock nut using one of the following:
- a hook spanner in the HN series to a tightening angle of about 70° (→ **fig. 4**)
- a TMHN lock nut spanner to a tightening angle of about 70°
- a torque wrench to the tightening torque indicated in **table 2** on **page 55**

Make sure that while tightening the nut, the sleeve does not rotate on the shaft.
**10** Lock the nut in position by bending down a tab on the locking washer into one of the slots provided around the circumference of the nut (→ **fig. 5**).
**11** Mount the second Y-bearing unit at the other end of the shaft, following steps 2 through 9.
**12** Make sure the shaft turns smoothly and the bearings are not jammed in place. If necessary, remove the last Y-bearing unit to be mounted, determine a new installation position for the adapter sleeve on the shaft and mount the Y-bearing unit again.
**13** If the shaft turns smoothly, secure the Y-bearing unit on the adapter sleeve by bending down a tab on the locking washer into one of the slots provided around the circumference of the nut (→ **fig. 5**).
**14** If applicable, snap the end cover(s) into place.

Fig. 1

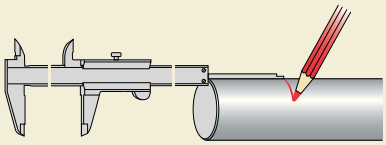


Fig. 2

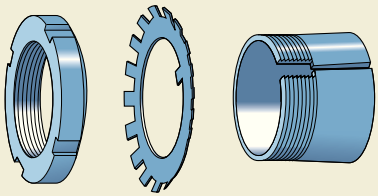


Fig. 3

Fig. 4

Fig. 5

# Mounting instructions for flanged Y-bearing units

**with a pressed steel housing and grub screws**

1. Mount any components that are on the shaft between the two Y-bearing units.
2. Place one housing half into position on the machine wall with threaded fasteners (→ **fig. 1**).
3. With the locking device facing outward, slide the Y-bearing onto the shaft and into the housing half.
4. Place the second housing half into position over the Y-bearing (→ **fig. 2**).
5. Fit the threaded fasteners (nuts or bolts), but do not tighten them.
6. Mount the Y-bearing unit at the other end of the shaft, following steps 2 through 5.
7. Tighten the threaded fasteners holding the flanged units in place.
8. Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
9. Tighten the grub screws on both units (→ **fig. 3**) to the tightening torque indicated in **table 1** on **page 54**.

Fig. 1

Fig. 2


Fig. 3

# Mounting instructions for flanged Y-bearing units

**with a pressed steel housing and an eccentric locking collar**

1. Mount any components that are on the shaft between the two Y-bearing units.
2. Place one housing half into position on the machine wall with threaded fasteners (→ **fig. 1**).
3. With the eccentric locking collar removed, slide the Y-bearing onto the shaft and into the housing half with the locking device facing outwards.
4. Place the second housing half into position over the Y-bearing (→ **fig. 2**).
5. Fit the threaded fasteners (nuts or bolts), but do not tighten them.
6. Mount the other Y-bearing unit at the other end of the shaft, following steps 2 through 5.
7. Tighten the threaded fasteners holding the flanged units in place.
8. Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
9. Place the eccentric locking collars on the inner ring extension of both Y-bearings and snug tighten them in the main direction of rotation (→ **fig. 3**).
10. Tighten the locking collars to their final position using a hook spanner with a stud engaging the hole in the circumference of the collar (→ **fig. 4**).
11. Tighten the grub screw in the eccentric locking collar of both units (→ **fig. 5**) to the tightening torque indicated in **table 1** on **page 54**.

Fig. 1

Fig. 2


Fig. 3

Fig. 4

Fig. 5

# Mounting instructions for Y-bearing take-up units

**with a cast housing and grub screws**

1. Mount any components that are on the shaft between the two Y-bearing units.
2. Slide the Y-bearing take-up units onto both shaft ends with the locking device facing outward.
3. Install the shaft and Y-bearing take-up units into the take-up frames and connect the adjustment screws via the cast hole in the units.
4. Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
5. Tighten the grub screws on both Y-bearing take-up units to the tightening torque indicated in **table 1** on **page 54**.
6. If applicable, snap the end cover(s) into place.

# Mounting instructions for Y-bearing take-up units

**with a cast housing and an eccentric locking collar**

1. Mount any components that are on the shaft between the two Y-bearing units.
2. With the eccentric locking collar removed, slide the Y-bearing take-up units onto both shaft ends with the locking device facing outwards.
3. Install the shaft with the Y-bearing take-up units into the take-up frames and connect the adjustment screws via the cast hole in the units.
4. Align the shaft in the bearing arrangement axially and – if possible – turn it a few times.
5. Place the eccentric locking collars on the inner ring extension of both Y-bearing units and snug tighten them in the main direction of rotation.
6. Tighten the locking collars to their final position using a hook spanner with a stud engaging the hole in the circumference of the collar.
7. Tighten the grub screw in the eccentric locking collar of both Y-bearing units to the tightening torque indicated in **table 1** on **page 54**.
8. If applicable, snap the end cover(s) into place.